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(56) Documents cited
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 F4H

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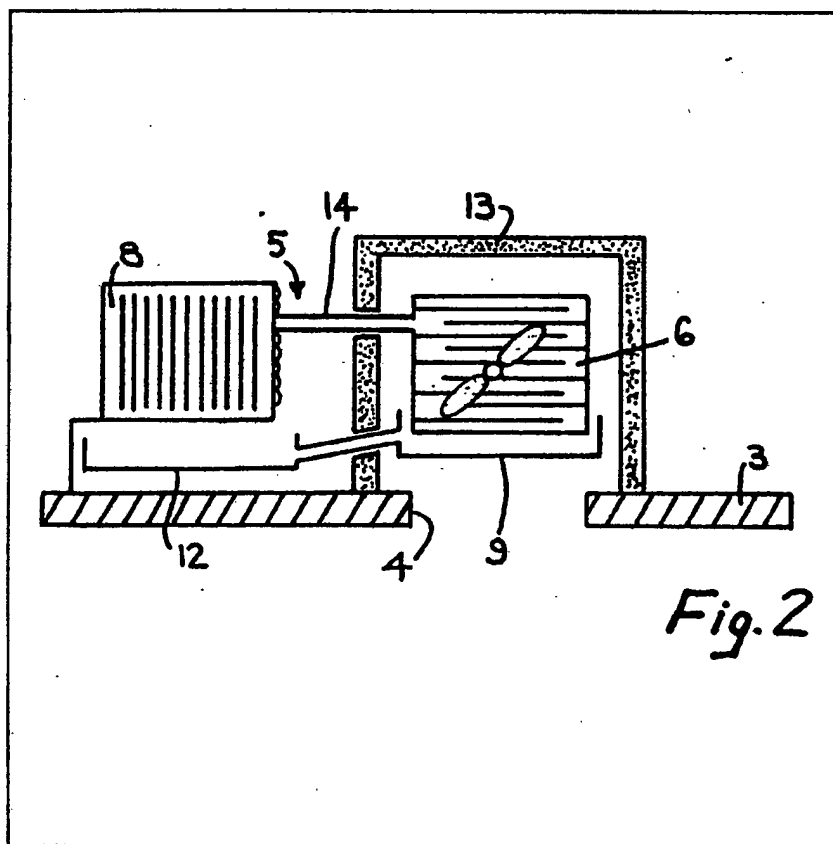
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(54) Refrigeration assembly

(57) A commercial refrigeration assembly comprises two walls and a top panel (3) fitted together at the corner of existing walls to form an enclosure in the form of a cold room, and a sealed refrigeration system for fitting to the enclosure to refrigerate the internal chamber. The refrigeration system includes an evaporator (6) to cool the air, and a condenser (8) for removing heat taken in by the evaporator (6) with a fan (7) for

drawing air from the chamber over the evaporator (6) to cool the air. The system is removable as a self-contained unit from the enclosure which has an aperture (4) enabling air to be drawn by the fan (7) from the chamber, cooled by the evaporator (6) and thence returned to the chamber. The evaporator (6) and fan (7) are enclosed by an insulated box (13) which fits over the aperture (4), the condenser (8) lying outside the box (13). A drip tray (9) beneath the evaporator is connected to a vaporizer tray beneath the condenser.



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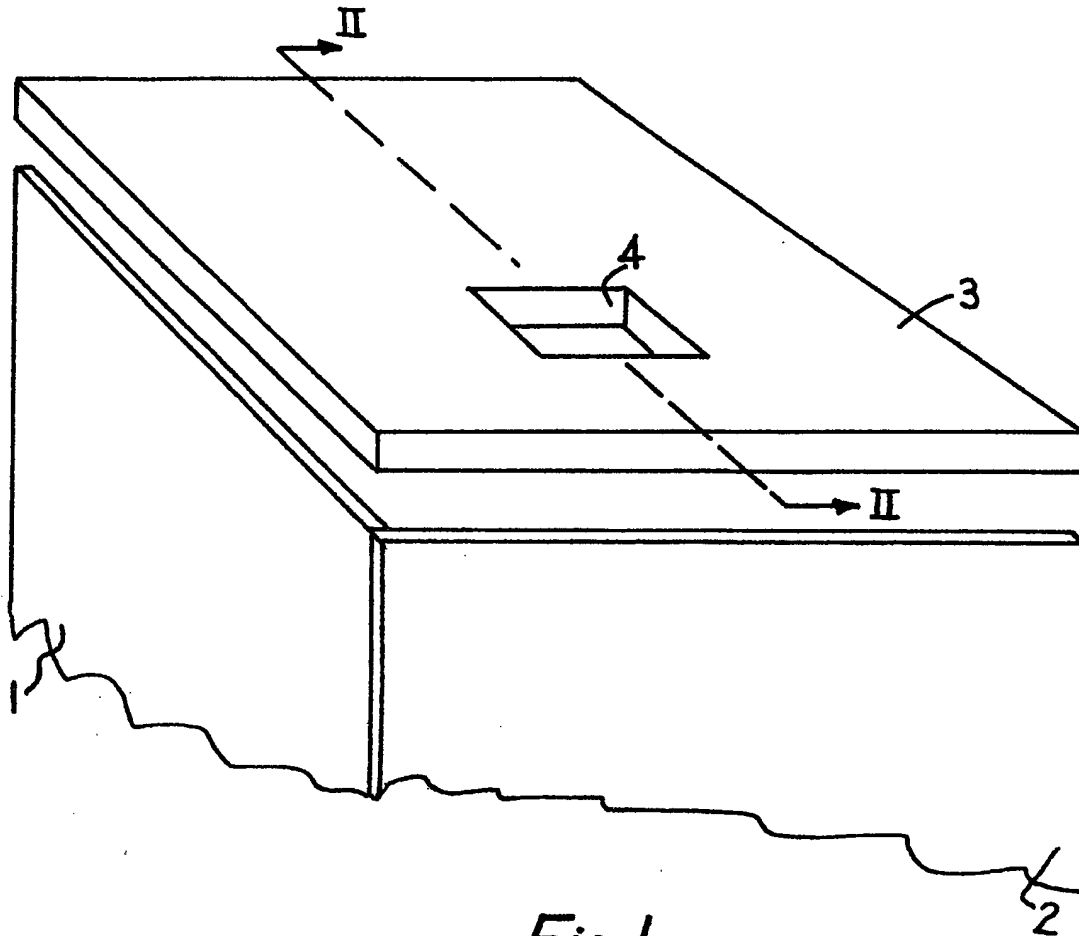


Fig. 1

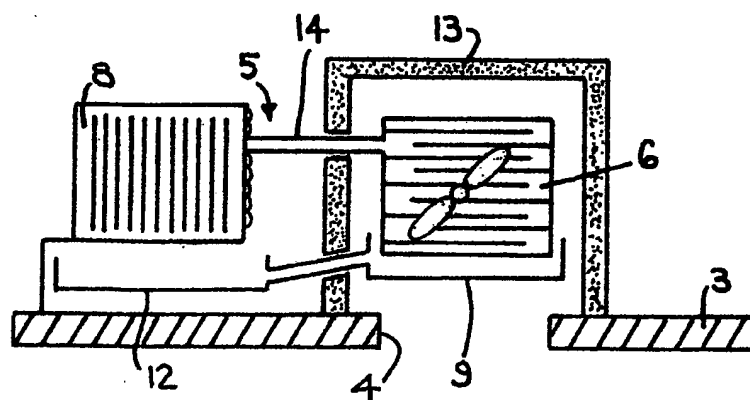


Fig. 2

SPECIFICATION

Refrigeration assembly

Field of the Invention

This invention relates to refrigeration
5 assemblies for commercial refrigerators which are
used in hotels, restaurants, shops and similar
commercial establishments. The term refrigerator
is intended to include freezers and coolers.

Background to the Invention

10 Commercial refrigerators should be reliable in
operation and simple to service and maintain
because of the large amounts of food which they
are required to store. The invention aims to
provide a refrigeration assembly in which the
15 operative parts are combined in a self-contained
unit which is easily replaceable with minimum
disturbance to the cooled chamber of the
refrigerator. A further object of the invention is to
enable such an assembly to be used with a cabinet
20 or with any other enclosure such as a cold room or
cold store.

Summary of the Invention

According to the invention a commercial
refrigeration assembly comprises walls for forming
25 an enclosure, a sealed refrigeration system for
fitting to the enclosure to refrigerate a chamber of
the latter, the refrigeration system including an
evaporator with a fan for drawing air from the
chamber over the evaporator to cool the air, and a
30 condenser for removing heat taken in by the
evaporator, wherein the system is removable as a
self-contained unit from the enclosure which has
an aperture enabling air to be drawn by the fan
from the chamber, cooled by the evaporator and
35 thence returned to the chamber, and wherein the
evaporator and fan are enclosed by an insulated
casing which fits over the aperture, the condenser
lying outside the casing.

The system may be located with respect to the
40 enclosure in any desired position, such as
beneath the enclosure or to one side thereof, but
a preferred arrangement is for the refrigeration
system to be located on top of the enclosure. In
this case the aperture is arranged in the top wall or
45 roof of the chamber with the evaporator and fan
being located on top of the aperture and the
condenser being located above but to one side of
the aperture.

The walls of the enclosure may define a cold
50 room or cold store, part of which may be formed
by existing walls of a building. For example, a cold
room or cold store may be built into a corner of an
existing room by use of the necessary panels so as
to form the required enclosure. In this case the
55 aperture is preferably formed in a top wall or roof
panel with the evaporator and fan enclosed by an
insulated box which fits over the aperture. It will
be appreciated that the condenser should lie
outside this insulated box for cooling purposes.

60 As a result of defrosting, refrigerators produce
condensed water which is conventionally
evaporated by means of an electric heater. This is

a very expensive and inefficient use of power, and
in the preferred embodiment of the invention the

65 heat output from the condenser is used to
evaporate this water. This is conveniently
achieved by arranging a drip tray underneath the
evaporator and leading any water which collects
in the drip tray into a separate vaporizer tray
70 positioned underneath and close to the condenser.

An embodiment of the invention will now be
described by way of example with reference to the
accompanying drawings, in which:

Figure 1 is a perspective view showing a
75 refrigeration enclosure before fitting of a
refrigeration system, and

Figure 2 is a diagrammatic sectional view on
the line II—II of Figure 1, showing the refrigeration
system in position.

Detailed Description of the Drawings

Figure 1 illustrates the enclosure of a
commercial refrigerator in the form of a cold room.
The enclosure is formed by two side walls 1 and 2
and a top panel 3. The walls 1 and 2 and the
85 panel 3 are fitted together at the corner of existing
walls to form a cold room. The wall 1 or 2 will
normally be provided with a door (not shown) to
enable access to be gained to the cold room.

The top panel 3 has therein an aperture 4 over
90 which is fitted a sealed refrigeration system
generally indicated at 5 in Figure 2. The
refrigeration system 5 comprises an evaporator 6,
a fan 7, a condenser 8, a condenser fan (not
shown) and a compressor.

95 A drip tray 9 is positioned beneath the
evaporator 6, a downwardly inclined pipe 10
leading from the drip tray 9 to a vaporizer tray 12
located beneath the condenser 8. A casing in the
form of a thermally insulated box 13 is positioned
100 over the aperture 4 so that an opening in the box
13 registers with the aperture 4. The box 13
encloses the evaporator 6, suitable apertures or
slots being provided in the insulating box 13 for
the pipe 10 and for a further pipe 14 providing
105 communication for the refrigerant between the
evaporator 6 and the condenser 8.

The refrigeration system 5 can be fitted onto
the panel 3 as a self-contained unit, and may be
replaced very simply for service or maintenance
110 purposes. If desired, the drip tray 9, pipe 10 and
vaporizer tray 12 may be a separate sub-assembly
which is not removed when the operative parts of
the refrigeration system (the evaporator 6, the
fan 7, the condenser 8 and the motor) are
115 removed.

In use the fan 7 draws air from the chamber
within the enclosure, through the aperture 4, over
the evaporator 6 and thence back into the
chamber as cold air. Heat is removed from the
refrigerant by means of the condenser 8. It will be
appreciated that the evaporator 6 should be
insulated from the surroundings whilst the
condenser 8 is desirably exposed to the
surroundings for cooling purposes.

125 Any water condensing on the evaporator 6 falls
into the drip tray 9 and thence flows into the

vaporizer tray 12 by means of the pipe 10. Heat from the condenser 8 evaporates water in the vaporizer tray 12 without any further power being needed for this purpose.

- 5 In practice, the pipe 14 would be closer to the pipe 10, the insulated box 13 having a short slot to enable the box 13 to be fitted in the position shown in Figure 2.

- 10 The described refrigeration system is designed for ease of installation and service. The system may be powered through a 13A plug/socket, and the mounting of the system outside the enclosure allows maximum use of refrigerated space.

CLAIMS

- 15 1. A commercial refrigeration assembly comprising walls for forming an enclosure, and a sealed refrigeration system for fitting to the enclosure to refrigerate a chamber of the latter, the refrigeration system including an evaporator
20 with a fan for drawing air from the chamber over the evaporator to cool the air, and a condenser for removing heat taken in by the evaporator, wherein the system is removable as a self-contained unit from the enclosure which has an aperture enabling
25 air to be drawn by the fan from the chamber, cooled by the evaporator and thence returned to the chamber, and wherein the evaporator and fan are enclosed by an insulated casing which fits over the aperture, the condenser lying outside the
30 casing.

2. An assembly according to claim 1, wherein

the system is located beneath the enclosure or to one side thereof.

- 35 3. An assembly according to claim 1, wherein the refrigeration system is located on top of the enclosure.

4. An assembly according to claim 3, wherein the aperture is arranged in the top wall or roof of the chamber with the evaporator and fan being
40 located on top of the aperture and the condenser being located above but to one side of the aperture.

5. An assembly according to any of the preceding claims, wherein the walls of the enclosure define a cold room or cold store.
45

6. An assembly according to claim 5, wherein part of the cold room or cold store is formed by existing walls of a building.

7. An assembly according to any of the preceding claims, wherein the casing is in the form of an open box, the box opening registering with the aperture.
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8. An assembly according to any of the preceding claims, wherein the heat output from the condenser is used to evaporate the water.
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9. An assembly according to claim 8, wherein a drip tray is arranged underneath the evaporator and means are provided to lead water in the drip tray into a separate vaporiser tray positioned
60 underneath and close to the condenser.

10. A commercial refrigeration assembly constructed and arranged substantially as herein particularly described with reference to the accompanying drawings.